

# Parapharyngeal metastasis from papillary thyroid carcinoma: a case diagnosed by thyroglobulin measurement in peroral fine-needle aspiration of a cystic metastatic lymph node

CHISATO TOMODA, MD, FUMIO MATSUZUKA, MD, AKIRA MIYAUCHI, MD

## Abstract

We report a case of a parapharyngeal cystic metastatic lymph node arising from papillary thyroid carcinoma (PTC). Parapharyngeal metastases arising from PTC are rare and correct diagnosis of the parapharyngeal mass before surgery is difficult. In this case, the diagnosis of a parapharyngeal mass was made pre-operatively by thyroglobulin measurement in peroral fine-needle aspiration with negative cytology.

**Key words:** Papillary Thyroid Carcinoma; Parapharyngeal Lymph-Node Metastasis; Thyroglobulin; Peroral Fine-Needle Aspiration

## Introduction

Parapharyngeal metastases arising from papillary thyroid carcinoma (PTC) are rare and correct diagnosis before surgery is sometimes difficult.<sup>1–10</sup> Thyroglobulin measurement in the needle wash-out of fine-needle aspiration biopsy was reported to be a useful technique for diagnosing cervical lymph-node metastasis in patients with thyroid carcinoma.<sup>11</sup> We report the case of a 58-year-old woman who had cystic lymph-node metastasis of the parapharyngeal space from PTC and was diagnosed pre-operatively using this method.

## Case report

A 58-year-old woman was referred to Kuma Hospital with a gradually increasing, painless swelling in the right-hand side of the neck. Physical examination showed a 4 cm soft neck mass in the right lobe of the thyroid and a 6 cm smooth swelling in the left tonsil that was extending superiorly to the nasopharynx and inferiorly to the epiglottis. A computed tomogram showed a fine, defined cystic swelling in the left parapharyngeal area that was attached to the lateral pharyngeal wall medially, and displacing the internal carotid artery and internal jugular vein laterally (Figure 1). The 4 cm cystic mass in the right lobe and a 1.7 cm solid mass with calcifications in the left lobe of the thyroid were also identified. Peroral fine-needle aspiration of the parapharyngeal mass and transcutaneous fine-needle aspiration of the thyroid mass were performed with a 22-gauge needle. Microscopic examination showed vesicular nuclei with intra-nuclear inclusions and nuclear grooves in the left solid mass of the thyroid, but the fine-needle aspiration biopsy did not permit diagnosis of the cystic mass in the parapharyngeal space. We also measured the thyroglobulin concentration in the fine-needle

aspiration biopsy of the parapharyngeal mass. After aspiration biopsy, the thyroglobulin level was measured in the needle wash-out, and was higher than 8000 ng/ml. We diagnosed the parapharyngeal mass as originating from PTC, although the cytology was negative.



FIG. 1

Computed tomography scan showing a hypodense and rim-enhancing cystic mass in the left parapharyngeal space.

From the Kuma Hospital, Kobe, Japan.  
Accepted for publication: 25 October 2004.

The patient underwent a total thyroidectomy with bilateral neck dissection and excision of the parapharyngeal mass via a transcervical approach by MacFee incision. To improve access to the parapharyngeal space, we removed a part of the angle of the mandible instead of using the mandibular swing approach. Histological examination of the thyroidectomy specimen showed papillary carcinoma in the bilateral lobe. A section from the parapharyngeal mass confirmed the same histology as that of the thyroid tumours. The patient then had radioiodine ablation. She is now disease-free and taking 1-thyroxin supplements.

## Discussion

Of parapharyngeal space metastases from PTC, cystic appearance has been disclosed in seven, including this case, in the literature up until now (Table I).<sup>1-10</sup> Fine-needle aspiration biopsy prior to surgery is simple and speedy, but cystic metastases in lymph nodes are one of the most common causes of false negatives.<sup>12,13</sup> The differential diagnosis of a cystic lesion arising in the parapharyngeal space should include cystic schwannoma, neurofibroma, necrotic nodal metastases or lymphomas, and cystic hygroma.<sup>14</sup> Thyroglobulin measurement in fine-needle aspiration biopsy was reported to be a useful technique for examining cervical lymph nodes in patients with PTC.<sup>11</sup> We used this method for the parapharyngeal mass and the thyroglobulin level was higher than 8000 ng/ml. We pre-operatively diagnosed the parapharyngeal mass originating from PTC with negative cytology and it matched the post-operative histological diagnosis. Previous investigators who followed Rouviere's anatomical pathway have described the possible route of dissemination of the PTC to the para-retropharyngeal spaces. Rouviere observed, as a result of his anatomic dissections, that superior trunks occur in about 20 per cent of the population.<sup>15</sup> But the anatomic characteristics of the parapharyngeal space makes early clinical examination of this area difficult, as small tumours cause few symptoms. In fact, these tumours must grow to at least 2–6 cm in diameter

- This is a case of parapharyngeal lymph node metastasis from papillary thyroid carcinoma
- Diagnosis was made by analysis of thyroglobulin in a peroral fine-needle biopsy
- The anatomic characteristics of the parapharyngeal space makes diagnosis of lesions in this site difficult

TABLE I

PARAPHARYNGEAL METASTASIS FROM PAPILLARY THYROID CARCINOMA: REVIEW OF THE LITERATURE

Author	Year	Age/ gender	Initial surgical treatment/recurrence (interval of recurrence)	Peculiar radiological features	FNAB	Need for repeat surgery for primary lesion	Size of retropharyngeal metastasis (cm)	Size of primary thyroid tumour (cm)
Robbins & Woodson <sup>6</sup>	1985	62/F	Initial surgery	Moderate enhancement	NE	Yes	6	2
Ferrario <i>et al.</i> <sup>1</sup>	1995	47/M	Initial surgery	Cystic appearance	PAC	No	4	1.2
Sirotnak <i>et al.</i> <sup>9</sup>	1997	53/F	Initial surgery	Calcific lesion	NE	Yes	2	1
Imai <i>et al.</i> <sup>2</sup>	1999	72/M	Recurrence (10 years)	Hyper- intensity	PAC	(Recurrence)	4	?
Saydam <i>et al.</i> <sup>7</sup>	1999	54/F	Initial surgery	Moderate enhancement	NE	No	?	<1
Ducci <i>et al.</i> <sup>3</sup>	2001	68/M	Recurrence (29 years)	Moderate enhancement	Failure	(Recurrence)	3.5	?
		51/M	Recurrence (13 years)	Cystic appearance	PAC	(Recurrence)	4	?
Aygenç <i>et al.</i> <sup>5</sup>	2002	47/M	Initial surgery	Cystic appearance	NE	Yes	5	<1
		13/F	Recurrence (2 years)	Slight hyper- intensity	NE	(Recurrence)	3	?
Thomas <i>et al.</i> <sup>4</sup>	2002	46/M	Initial surgery	Cystic appearance	PAC	No	6	1
Lombardi <i>et al.</i> <sup>10</sup>	2004	40/M	Initial surgery	Cystic appearance	Failure	Yes	?	2
		52/F	Initial surgery	Cystic appearance	NE	No	6	1.5
Tomoda (this case)	2004	58/F	Initial surgery	Hypodense and cystic	Failure	No	4	4

NE = not examined, PAC = papillary adenocarcinoma, FNAB = fine-needle aspiration biopsy.

before a mass can be detected clinically according to the past reports. When we diagnose and treat a clinical thyroid carcinoma, this area is not examined routinely. Parapharyngeal lymph node metastasis is possibly more common than reports show, but most cases do not seem to markedly influence the clinical course of the disease.

### Conclusion

We describe a case of papillary carcinoma of the thyroid presenting as a parapharyngeal mass, the diagnosis of which was made pre-operatively by thyroglobulin measurement in peroral fine-needle aspiration with negative cytology. This method is useful and quick to perform.

### References

- Ferrario F, Roselli R, Macchi A. Occult thyroid carcinoma presenting as a parapharyngeal mass. *J Laryngol Otol* 1995;**109**:1204–6
- Imai T, Tanaka Y, Matsuura N, Takahashi M, Torii S, Funahashi H. Successful surgical treatment of a solitary parapharyngeal metastasis from thyroid cancer, using the mandibular swing-transcervical approach: report of a case. *Surg Today* 1999;**29**:378–81
- Ducci M, Bozza F, Pezzuto RW, Palma L. Papillary thyroid carcinoma metastatic to the parapharyngeal space. *J Exp Clin Cancer Res* 2001;**20**:439–41
- Thomas G, Pandey M, Jayasree K, Pradeep VM, Abraham EK, Iype EM, *et al.* Parapharyngeal metastasis from papillary microcarcinoma of thyroid: report of a case diagnosed by peroral fine needle aspiration. *Br J Oral Maxillofac Surg* 2002;**40**:229–31
- Desuter G, Lonneux M, Plouin-Gaudon I, Jamar F, Coche E, Weynand B, *et al.* Parapharyngeal metastases from thyroid cancer. *Eur J Surg Oncol* 2004;**30**:80–4
- Robbins KT, Woodson GE. Thyroid carcinoma presenting as a parapharyngeal mass. *Head Neck Surg* 1985;**7**:434–6
- Saydam L, Kalcioglu T, Demirkiran A, Gurer M. Occult papillary thyroid carcinoma presenting as a parapharyngeal metastasis. *Am J Otolaryngol* 1999;**20**:166–8
- Aygenc E, Kaymakci M, Karaca C, Ozdem C. Papillary thyroid carcinoma metastasis to the parapharyngeal space. *Eur Arch Otorhinolaryngol* 2002;**259**:322–4
- Sirotnak JJ, Loree TR, Penetrante R. Papillary carcinoma of the thyroid metastatic to the parapharyngeal space. *J Ear Nose Throat* 1997;**76**:342–4
- Lombardi D, Nicolai P, Antonelli AR, Maroldi R, Farina D, Shaha AR. Parapharyngeal lymph node metastasis: an unusual presentation of papillary thyroid carcinoma. *Head Neck* 2004;**26**:190–6
- Cignarelli M, Ambrosi A, Marino A, Lamacchia O, Campo M, Picca G, *et al.* Diagnostic utility of thyroglobulin detection in fine-needle aspiration of cervical cystic metastatic lymph nodes from papillary thyroid cancer with negative cytology. *Thyroid* 2003;**13**:1163–7
- Court-Payen M, Nygaard B, Horn T, Krag Jacobsen G, Braendstrup O, Narvestad E, *et al.* US-guided fine-needle aspiration biopsy of thyroid nodules. *Acta Radiol* 2002;**43**:131–40
- Ustun M, Risberg B, Davidson B, Berner A. Cystic change in metastatic lymph nodes: a common diagnostic pitfall in fine-needle aspiration cytology. *Diagn Cytopathol* 2002;**27**:387–92
- Carrau RL, Myers EN, Johnson JT. Management of tumors arising in the parapharyngeal space. *Laryngoscope* 1990;**100**:583–9
- Rouviere H. *Anatomy of the Human Lymphatic System: a Compendium Translated from the Original and Rearranged for the Use of Students and Practitioners by MJ Tobias.* Ann Arbor: Edwards Bros, 1938

Address for correspondence:  
Chisato Tomoda, MD,  
Kuma Hospital,  
8–2–35, Shimoyamate-dori, Chuo-ku,  
Kobe 650–0011, Japan.

Fax: +81–78–371–3645  
E-mail: tomoda@kuma-h.or.jp

---

Dr C Tomoda takes responsibility for the integrity of the content of the paper.  
Competing interests: None declared

---